

# Work Order ID 75643

October-27-11 11:42:36 AM

**\*75643\***

Page 1

Item ID: D6008-132 Accept **\*N900040100\*** Setup Start **\*NS1\***  
 Revision ID: Stop **\*NS2\***  
 Item Name: Crosstube extrusion  
 Start Date: 27/10/2011 Start Qty: 20.00 **\*20\*** Cust Item ID:  
 Required Date: 29/11/2013 Req'd Qty: 20.00 **\*20\*** Customer:  
 Reference:

Approvals: Process Plan: M.L.J Date: 11/10/27 Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start **\*NR1\***  
 QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D6008	Rev A

100	PURCHASING	0.00							
<b>*100*</b>									
Purchasing	Memo	0.00							
Purchasing	Issue P/O: <u>15351</u>								

- a) Order as per Dwg D6008
- b) Material: 3.250 x 0.438 wall 7075-T6/T6511 (WW-T-700/7 or QQ-A-225/9 or QQ-A-200/11) seamless aluminum tube
- c) Minimum ultimate tensile strength = 77 ksi
- d) Minimum tensile yield strength = 66 ksi
- e) Tolerance are per ASTM B210 (see details on Dwg D6008)
- f) Material certification required

110	Receive & Inspect for Damage & Mat'l Certs	0.00							
<b>*110*</b>									
Packaging	Memo	0.00							
Packaging	Ensure material certification is attached								

CL 11/11/03 20

43/11/22 (17)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 75643

October-27-11 11:42:36 AM

**\*75643\***

Page 2

Item ID: D6008-132 Accept **\*N900040100\*** Setup Start **\*NS1\***  
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 Required Date: 29/11/2013 Req'd Qty: 20.00 **\*20\*** Customer:  
 Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start **\*NR1\***  
 QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	QC6- Inspect dimensions to drawing	0.00							
<b>*120*</b>									
QC	Memo	0.00							
Quality Control	Ensure Material certification comply to Dwg D6005								
	<i>* SEE ATTACHED Dim sketch *</i>								
130	Identify as per dwg & Stock Location: <i>L/G</i>	0.00							
<b>*130*</b>									
Packaging	Memo	0.00							
Packaging									
140	QC21- Final Inspection - Work Order Release	0.00							
<b>*140*</b>									
QC	Memo	0.00							
Quality Control									

*4/7*

*mmL*  
*13/07/30*

*MLJ 13-07-31*

*MLJ 13-07-31*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

October-27-11 11:42:41 AM

Page 1

Work Order ID: 75643

\*75643\*

Parent Item: D6008-132

\*D6008-132\*

Parent Item Name: Crosstube extrusion

Start Date: 27/10/2011

Required Date: 29/11/2013

Start Qty: 20.00

Required Qty: 20.00

Comments: IPP Rev:A New Issue 07-06-18 JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6008-132P		Purchased	No			110	Each	0.0000	1	20			
*D6008-132P*									**				
Crosstube extrusion													

43/1/25 (17)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

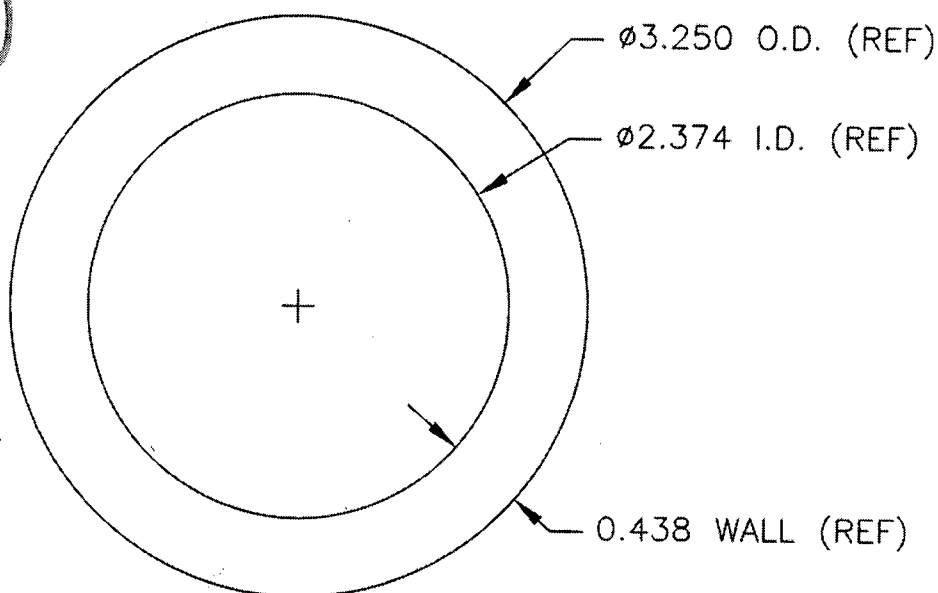


DESIGN <i>CP</i>	DRAWN BY <i>CP</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>#</i>	APPROVED <i>#</i>	DRAWING NO. D6008	REV. A SHEET 1 OF 1
DATE 00.11.17		TITLE CROSSTUBE MATERIAL	SCALE 1:1
A	00.11.17	NEW ISSUE	

## SPECIFICATION CONTROL DRAWING

**RELEASED**  
00.11.24 *#*

SHOWN  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. *75043*  
*M.L.J.*  
*11/10/27*



### NOTES

- 1) D6008-XXX CROSSTUBE  
LENGTH

WHERE XXX IS LENGTH IN INCHES  
EG. 180" LONG TUBE: D6008-180

- 2) MATERIAL: 3.250 OD x 0.438 WALL 7075-T6/T6511 (WW-T-700/7 OR QQ-A-225/9 OR QQ-A-200/11) SEAMLESS ALUMINUM TUBE.  
MINIMUM ULTIMATE TENSILE STRENGTH = 77 ksi  
MINIMUM YIELD TENSILE STRENGTH = 66 ksi
- 3) TOLERANCES ARE PER ASTM B210 AS FOLLOWS:  
O.D.:  $\pm 0.008$  MEAN ( $\pm 0.016$  INCLUDING OVALITY)  
WALL:  $\pm 0.020$  MEAN ( $\pm 0.044$  INCLUDING ECCENTRICITY)  
LENGTH: XXX  $+0.125/-0.000$   
STRAIGHTNESS: 0.010" DEVIATION / 12" LENGTH
- 4) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 5) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries





Inna ref. no.	44994/100
tomar PO.	P.O.15351
date:	07.02.13

Dart Aerospace	P.O.15351
D6008-132	
Made in Germany	Hawkesbury ONT Canada

**from live plant pests**

875	236	1111	17			1,251 m³
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# Abnahmeprüfzeugnis 3.1 - DIN EN 10204:2005

Inspection Certificate 3.1 - DIN EN 10204:2005 / Certificat de Reception 3.1- DIN EN 10204:2005

**Kunde:** Dart Aerospace Ltd.  
**Client:** 1270 Aberdeen Street  
 K6A1K7 Hawkesbury, ON Canada

**Zeugnisnummer:** 605/13  
**Cert No. / No. du certificat:**  
**Bestellnummer:** PO 15351  
**Order No. / No. de commande:**  
**Auftrag:** 44994/100  
**Our Reference/Notre Reference:**

**Produkt:** Rohre nahtlos gepresst  
**Product / Produit:** Tubes seamless extruded  
**Spezifikation:** AMS - QQ - A - 200/11; Spezifikation Dart Aerospace D6008  
**Specification:**

**Werkstoff:** 7075  
**Alloy/Alliage:**  
**Abmessung:** 3,250 INCH x 2,374 INCH x 0,438 INCH x 132,000 INCH  
**Size / Dimension:** D6008-132 3.250 X 0.438 X 132

**Zustand:** T 6511  
**Temper/État:**

**Kennzeichnung:** ALUnna-Cert No. 605/13-7075-T6511-Cast No. 3540-AMS-QQ-A-200/11 - 3.250" OD X 0.438" Wall-Heat Lot No.800916-Alunna Order  
**Marking/Marquage:** Conf No. 44994/100-1-P.O.15351

**Lieferung:** pcs. lbs  
**Delivered Material / Matériel délivré:** 17 875  
**Country of Manufacture: Germany**  
 Products are in accordance with applicable RoHS  
 Other elements each max. 0,05 %, total 0,15 %

## 1. Chemische Analyse

## Chemical Analysis / analyse chimique

Charge/ Cast No.	min.	max.	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Zr	Bi	Sn	Ni
			0,40	0,50	1,2	0,30	2,1	0,18	5,1						
					2,0		2,9	0,28	6,1	0,20					
3540/09			0,100	0,196	1,558	0,060	2,593	0,188	5,685	0,039	0,002	0,0291	0,0001	0,0013	0,0001

**Hydrogen content:** 0,10 ccm/100 g Al Elements without indication < 0,01 % **country of melt manufacturer: Germany**

## 2. Mechanische Eigenschaften

## Mechanical Properties / Valeurs Mécaniques

Anforderungen Requirements	tensile (Rm) ksi	yield (Rp0,2) ksi	elongation 2" %	elongation A %	Hardness HB	Heat/Lot No.
min.	77,0	66,0	7,0			
max.						
1	89,320	83,230	10,0			800916
2	88,595	81,925	9,0			

max. RMS 25 - max. 21,5 µ"

### Ergebnis der Prüfungen:

Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

### Test results:

We confirm that the delivery has been tested and applies to the agreements made on receipt of the order

### Resultats:

Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande

# EXTRUSION INSPECTION SHEET



		SIDE A		SIDE B		Measurement unit		Inches		Symbol		"		ULTRA SONIC MEASUREMENTS			
TUBE #	TOTAL LENGTH	DIA		DIA		INSIDE DIA	wall thickness measured w/vern		Strightness at 12" in middle	Rockwell Reading	LOCATION on tube	R1	R2	R3	R4		
		R1	R2	R1	R2												
DWG	132"	3.25"				2.374"	0.438"		0.01"	N/A	Middle	N/A					
1	132"	3.251"	3.247"	3.251"	3.248"	2.363"	0.438"	0.428"	0.0045"	N/A	Middle	0.441"	0.442"	0.436"	0.444"		
2	132"	3.251"	3.247"	3.25"	3.247"	2.365"	0.449"	0.439"	0.0085"	N/A	Middle	0.443"	0.439"	0.443"	0.433"		
3	132"	3.248"	3.247"	3.25"	3.249"	2.363"	0.449"	0.428"	0.008"	N/A	Middle	0.442"	0.436"	0.436"	0.442"		
4	132"	3.25"	3.248"	3.251"	3.247"	2.371"	0.443"	0.421"	0.0065"	N/A	Middle	0.438"	0.439"	0.441"	0.444"		
5	132"	3.243"	3.241"	3.254"	3.243"	2.367"	0.449"	0.424"	0.0035"	N/A	Middle	0.439"	0.442"	0.441"	0.425"		
6	132"	3.251"	3.249"	3.249"	3.249"	2.373"	0.448"	0.432"	0.0035"	N/A	Middle	0.436"	0.436"	0.441"	0.444"		
7	132"	3.244"	3.241"	3.244"	3.243"	2.266"	0.436"	0.424"	0.006"	N/A	Middle	0.442"	0.433"	0.429"	0.444"		
8	132"	3.251"	3.248"	3.25"	3.248"	2.269"	0.448"	0.422"	0.006"	N/A	Middle	0.434"	0.445"	0.44"	0.44"		
9	132"	3.25"	3.248"	3.247"	3.243"	2.378"	0.438"	0.428"	0.0045"	N/A	Middle	0.441"	0.444"	0.435"	0.441"		
10										N/A	Middle						
11										N/A	Middle						
12										N/A	Middle						
13										N/A	Middle						
14										N/A	Middle						
15										N/A	Middle						
16										N/A	Middle						
PART # D6008-132		P/O# 15351				BATCH # B75643				Notes:							



end measurement with vern

Mean OUTSIDE DIA. Permissible +- 0.015									
Tube	Actual A	Actual B	Mean	Nominal	Tolerance	min	max	min	max
1	0.438	0.428	0.433	0.438	0.015	0.423	0.453	0.01	-0.020
2	0.449	0.439	0.444	0.438	0.015	0.423	0.453	0.021	-0.009
3	0.449	0.428	0.439	0.438	0.015	0.423	0.453	0.0155	-0.015
4	0.443	0.421	0.432	0.438	0.015	0.423	0.453	0.009	-0.021
5	0.449	0.424	0.437	0.438	0.015	0.423	0.453	0.0135	-0.017
6	0.448	0.432	0.440	0.438	0.015	0.423	0.453	0.017	-0.013
7	0.436	0.424	0.430	0.438	0.015	0.423	0.453	0.007	-0.023
8	0.448	0.422	0.435	0.438	0.015	0.423	0.453	0.012	-0.018
9	0.438	0.428	0.433	0.438	0.015	0.423	0.453	0.01	-0.020
10	0.000	0.000	0.000	0.438	0.015	0.423	0.453	-0.423	-0.453
11	0.000	0.000	0.000	0.438	0.015	0.423	0.453	-0.423	-0.453
12	0.000	0.000	0.000	0.438	0.015	0.423	0.453	-0.423	-0.453
13	0.000	0.000	0.000	0.438	0.015	0.423	0.453	-0.423	-0.453
14	0.000	0.000	0.000	0.438	0.015	0.423	0.453	-0.423	-0.453
15	0.000	0.000	0.000	0.438	0.015	0.423	0.453	-0.423	-0.453

OUTSIDE DIA. Permissible +- 0.038								
Tube	Actual A	Actual B	Nominal	Tolerance	min	max	min	max
1	0.438	0.428	0.438	0.038	0.400	0.476	0.038	-0.048
2	0.449	0.439	0.438	0.038	0.400	0.476	0.049	-0.037
3	0.449	0.428	0.438	0.038	0.400	0.476	0.049	-0.048
4	0.443	0.421	0.438	0.038	0.400	0.476	0.043	-0.055
5	0.449	0.424	0.438	0.038	0.400	0.476	0.049	-0.052
6	0.448	0.432	0.438	0.038	0.400	0.476	0.048	-0.044
7	0.436	0.424	0.438	0.038	0.400	0.476	0.036	-0.052
8	0.448	0.422	0.438	0.038	0.400	0.476	0.048	-0.054
9	0.438	0.428	0.438	0.038	0.400	0.476	0.038	-0.048
10	0.000	0.000	0.438	0.038	0.400	0.476	-0.400	-0.476
11	0.000	0.000	0.438	0.038	0.400	0.476	-0.400	-0.476
12	0.000	0.000	0.438	0.038	0.400	0.476	-0.400	-0.476
13	0.000	0.000	0.438	0.038	0.400	0.476	-0.400	-0.476
14	0.000	0.000	0.438	0.038	0.400	0.476	-0.400	-0.476
15	0.000	0.000	0.438	0.038	0.400	0.476	-0.400	-0.476

## center measurment with ultra sonic

Mean OUTSIDE DIA. Permissible +- 0.015									
Tube	highest	lowest	Mean	Nominal	Tolerance	min	max	min	max
1	0.444	0.436	0.440	0.438	0.015	0.423	0.453	0.017	-0.013
2	0.443	0.433	0.438	0.438	0.015	0.423	0.453	0.015	-0.015
3	0.442	0.436	0.439	0.438	0.015	0.423	0.453	0.016	-0.014
4	0.444	0.438	0.441	0.438	0.015	0.423	0.453	0.018	-0.012
5	0.442	0.425	0.434	0.438	0.015	0.423	0.453	0.0105	-0.020
6	0.444	0.436	0.440	0.438	0.015	0.423	0.453	0.017	-0.013
7	0.444	0.429	0.437	0.438	0.015	0.423	0.453	0.0135	-0.017
8	0.445	0.434	0.440	0.438	0.015	0.423	0.453	0.0165	-0.014
9	0.444	0.435	0.440	0.438	0.015	0.423	0.453	0.0165	-0.014
10	0.000	0.000	0.000	0.438	0.015	0.423	0.453	-0.423	-0.453
11	0.000	0.000	0.000	0.438	0.015	0.423	0.453	-0.423	-0.453
12	0.000	0.000	0.000	0.438	0.015	0.423	0.453	-0.423	-0.453
13	0.000	0.000	0.000	0.438	0.015	0.423	0.453	-0.423	-0.453
14	0.000	0.000	0.000	0.438	0.015	0.423	0.453	-0.423	-0.453
15	0.000	0.000	0.000	0.438	0.015	0.423	0.453	-0.423	-0.453

OUTSIDE DIA. Permissible +- 0.038								
Tube	highest	lowest	Nominal	Tolerance	min	max	min	max
1	0.444	0.436	0.438	0.038	0.400	0.476	0.044	-0.040
2	0.443	0.433	0.438	0.038	0.400	0.476	0.043	-0.043
3	0.442	0.436	0.438	0.038	0.400	0.476	0.042	-0.040
4	0.444	0.438	0.438	0.038	0.400	0.476	0.044	-0.038
5	0.442	0.425	0.438	0.038	0.400	0.476	0.042	-0.051
6	0.444	0.436	0.438	0.038	0.400	0.476	0.044	-0.040
7	0.444	0.429	0.438	0.038	0.400	0.476	0.044	-0.047
8	0.445	0.434	0.438	0.038	0.400	0.476	0.045	-0.042
9	0.444	0.435	0.438	0.038	0.400	0.476	0.044	-0.041
10	0.000	0.000	0.438	0.038	0.400	0.476	-0.400	-0.476
11	0.000	0.000	0.438	0.038	0.400	0.476	-0.400	-0.476
12	0.000	0.000	0.438	0.038	0.400	0.476	-0.400	-0.476
13	0.000	0.000	0.438	0.038	0.400	0.476	-0.400	-0.476
14	0.000	0.000	0.438	0.038	0.400	0.476	-0.400	-0.476
15	0.000	0.000	0.438	0.038	0.400	0.476	-0.400	-0.476